DISCUSSION PAPER #2

IMPACTS OF A CHANGE IN

THE METHOD OF PAYMENT:

FOR THE

AGRICULTURAL ADVISORY COUNCIL

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EXECUTIVE SUMMARY

This paper is the second in a series providing information regarding the potential impacts, if a change in the method of payment was to occur, with the Crow benefit being paid to the producer. This is an extremely complex issue requiring information on a series of aspects and a number of sectors; including producers, transportation/handling, processors and rural communities.

EXECUTIVE SUMMARY - SECTION I

Analysis by the consulting team and review of previous pay the producer proposals indicates that a large number of characteristics may be used to describe the alternative MOPs. Eleven characteristics have been identified. Each characteristic has a number of possible alternatives.

The 40 alternatives listed under the eleven characteristics can be combined in a large number of combinations making it nearly impossible to cover all of these combinations. Therefore, the analysis is presented for each characteristic, covering each of the alternatives under that characteristic and noting the interactions which occur.

The characteristics which form pay the producer alternatives are as follows:

- Annuity vs. bond vs. program payment
- Length of payment period
- Size of payment
- Transferability
- Transition period
- Dilution compensation
- Delivery mechanism
- Tax status
- Base period for calculation of payment
- Receiver of the payment
- Basis for calculation of payment

Any change in the MOP will be looked at by farmers from a perspective of its equitability, i.e., "am I being treated fairly?" The issue of equitability will be critical in having any change in the MOP accepted by farmers. Unfortunately, there are a number of different view points as to what is equitable.

One perspective is that of the status quo. In this case, individuals will look at the existing Crow benefit and will analyze their perception of whether they are "winners" or "losers". This perspective of equitability relates strongly to the dilution effect, whereby some producers perceive that they are not fully compensated and are, therefore, "losers". Strong resistance to the proposed change may be expressed by this group.

Another perspective of equitability relates to the views of various interest groups, such as livestock producers or grain producers. If one group views the other as having preferential treatment and envies their position, then it is perceived that they have not been treated equitably.

A number of groups see resource neutrality as a principle which should be utilized when examining any change in the MOP. The existing WGTA rate structure is viewed by the livestock sector and some processing sectors as distorting the production and marketing decisions made by producers.

The Equitability vs. Resource Neutrality Dilemma

During the past decade, many alternative pay the producer MOPs have been designed. There appears to have been a strong desire in these designs to accommodate both the concerns that arise from the equitability issue and the concerns which arise from the resource neutrality issue. As yet the dilemma has not been resolved.

Level of Dilution Effect

The dilution effect occurs due to the Crow benefit being distributed to a broader base than occurs at present. The dilution effect can be quite significant, depending entirely upon which alternative basis for calculation of the payment is selected. To illustrate the possible extent of the dilution effect it has been assumed the total federal government payment is fixed at $720 million and the following three alternative bases for calculation of the payment have been selected:

(i) Payment Based On Grain Shipments Eligible Under WGTA.

For illustrative purposes it is assumed the payment would amount to $17.60 per tonne.

(ii) Production Of Major Grains

The volume receiving the Crow benefit payments would grow by 21% compared to the first alternative presented above. The payment per tonne would fall from the $17.60 shown in the first alternative above, to a level of $14.55 per tonne. This lower level of payment per tonne would be paid on the larger volume to still pay out $720 million. Assuming a weighted average yield for all crops of 0.7 tonnes per acre the $14.55 per tonne would amount to $10.19 per acre.

The cost of compensating producers, by maintaining the payment level at $17.60 per tonne could be up to $30 million in Manitoba, under this particular alternative.

(iii) Arable Acres.

In 1987 in Manitoba approximately 13.347 million acres were classified as improved or arable acres.[1] This is 27% larger than the 10.515 million acres which were utilized for grain crops or fallow under the alternative (ii) above. If the total Crow benefit payment of $720 million was fixed, then the payment would fall to $8.02 per acre from the $10.19 per acre in alternative (ii) above.

Thus, the dilution effect could reduce payments, as shown in this illustration, by up to 35 per cent. The cost of compensating Manitoba producers for the impact of dilution could total, in this example, up to approximately $75 million. If fully compensated, the farm sector could receive both the existing level of Crow benefit, plus the dilution compensation.

The dilution effect does not reduce total payments to the farm sector but rather redistributes the payments.

Historical Period for Calculation of the Payment

The consulting team examination of this issue, in the context of the examination of the other characteristics of MOPs listed in the previous section, has identified a fundamental characteristic which may reduce the conflict between equitability and resource neutrality.

If the payment under any MOP alternative is based upon future time periods, there will be substantial difficulties with resource neutrality. Whether based upon exports, arable acres, or other bases, producers will have their production and marketing decisions influenced by the Crow benefit payment if the payment is based upon future periods. Therefore, the use of a historic time period, for calculation of the payment, will prevent producers' decisions from being influenced by the payment.

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[1] Source: Manitoba Agriculture Yearbook

Impact on Land Values

A number of factors impact land values. A significant factor is how the payment is structured. Land values might fall, remain constant, or even (in some cases) increase, depending upon the payment mechanism.

The impact from any change in MOP occurs due to two separate factors. The first factor is the increased freight rate. The second factor is the Crow benefit payment to each producer.

Freight rate increases will result in decreased grain prices. Prices will initially drop and will eventually, in some cases, recover to some extent. Even if the payment exactly offsets the increased freight rate, an impact would occur. If the payment is resource neutral, that is, it does not influence production, transportation and marketing decisions, changes would still be made by producers to maximize profits.

If the payment of the Crow benefit is paid only on the basis of individual parcels of land (to the owner or perhaps the renter) and the payment is dependent upon owning, or using, that parcel of land; the adverse or positive influences of the dilution effect would be associated with each parcel of land. Therefore, the land value would be effected by the positive or adverse influence of the dilution effect. Other alternative MOP's may not tie the receipt of the payment to the ownership, or use, of the land and in these cases the positive or adverse influence would not affect the land values even though the farmer's financial position would be subject to the positive or adverse influence.

The impact of a change in the MOP on land must be set in the context of fluctuating international market prices for grains and variations in production related to weather. Grain farm incomes are cyclical and variable. Farm cash receipts for the major grains on the prairies fell from approximately $6.0 billion in 1983 to $3.8 billion in 1987, a 37% reduction. This is approximately three times the value of the Crow benefit.

EXECUTIVE SUMMARY - SECTION II

Section II of this discussion paper analyzes the production shifts that can be expected to occur at the primary level, including livestock production, under several different policy scenarios.

The effect of each alternative is to increase transportation costs paid by grain producers, creating an incentive for changes in planned production. The extent to which production shifts may occur depends on the relationship between the farmgate price of a commodity and the production decision for that commodity, as well as the prices and production decisions involving alternative commodities.

Because various areas of the province favour the production of different agricultural commodities, production shifts can be expected to differ between regions. As such, the paper discusses shifts within different regions of Manitoba as well as those for the province as a whole.

If farmers come to bear a greater proportion of the real costs of grain transportation, the conventional view suggests that two major production shifts would likely occur: (i) an inter-crop shift in production patterns, and (ii) a subsequent expansion in livestock production.

Although a general consensus exists with respect to the major shifts in production, one major point of departure is the relationship between changes in transportation costs and the amount by which farmgate prices are expected to decline. Most previous studies have suggested or stated that such prices will decline in an amount equal to the transportation costs; however, consultations with industry representatives and a small number of earlier studies have suggested that this relationship is not necessarily so.

In reality, there would not likely be a simple 1:1 relationship between the increased freight rates that farmers would pay and the fall in all farmgate grain prices. For some crops, the market is expected to absorb a portion of this rate increase. Therefore, the production

shift analysis is done under this modified "market absorption" assumption to account for the portion of the freight rate increase that might be absorbed by the market.

The following summarizes the key findings of this study:

- Although there is a general tendency for production to shift into higher valued low volume crops, this depends greatly on agronomic characteristics for any particular region and the market to which the crop is shipped, e.g. Canola to Vancouver.

- The greater the available alternatives in any particular region, the more sensitive will be production shifts to the simultaneous fall in farmgate prices.

- The conventional view assumes that farmgate prices would fall by an amount equal to transportation costs. This study challenged and modified this assumption, recognizing that a portion of the increased transportation charges would be absorbed by the market. This "market absorption" assumption was developed in consultation with industry representatives.

- The production shifts in grain crops, at the provincial level would be modest.

- Shifts in production are predicated on price changes for the various crops. The assumptions made and scenarios analyzed determine the extent to which prices change and, in turn, the production shifts. The combined effect of the major scenarios and assumptions on farmgate prices is explained in the text of the report and summarized below:

Price Impact with Market Absorption - WGTA Total Rates[1]

	Wheat	Canola	Barley	Flaxseed
Rate change ($/tonne)	-16.53	-32.19	-16.53	-16.53
Market absorption (%)	0	40	50	10
Total price change ($/tonne)	-16.53	-19.31	-8.26	-14.88
Average price ($/tonne)[2]	153.60	281.30	100.25	270.70
% Change in price	-10.8	-6.9	-8.2	-5.5

1 Canola is priced FOB Vancouver
2 Manitoba Agriculture Yearbook, Farm Value Price per tonne, ten year average, 1978-87.

Provincial Shift - WGTA Total Rate with Market Absorption

Commodity	Change in production
Wheat	- 1.6%
Barley	+ 5.5%
Canola	+ 2.9%
Oats	+ 5.6%
Flax	+ 3.8%
Forage	+ 2.1%
Cattle	+24.0%
Hogs	+28.0%

- It is expected that, if a change in the method of payment were to occur, pressures from farm groups and the railways would cause the Western Grain Transportation Act to be revised or eliminated. As such, a commercial rate scenario would seem to be likely in the long run.

- Under the commercial rate scenario, there would be the greatest variation within the regions. That is, while agronomic differences are relatively uniform within any region, the railway infrastructure costs differ considerably for points within regions.

- There are two major factors that are expected to cause livestock production to expand if the payment was made to the producer. First, there would be pressure for the feedgrain assistance programs in Alberta and Saskatchewan to be dismantled, resulting in more cattle being finished in Manitoba. Second, lower feedgrain costs would induce greater hog and cattle production. The extent to which this second factor has an effect on livestock production depends on the assumption made regarding market absorption.

- Technical changes in the nature of the market, such as increased domestic processing and decreased exports of raw grain, would tend to shift the analysis. Indeed, given such adjustments, limited production shifts may actually occur in the long run.

- Livestock production under the "market absorption" assumption and a change to pay the producer, would expand by 58 thousand head for cattle and by 522 thousand head for hogs, increasing by 24 and 28 percent respectively for the province. These are long run estimates, based on the effect of lower feedgrain prices, holding all other variables constant.

SECTION I

ALTERNATIVE PAY THE PRODUCER

METHODS OF PAYMENT

OF THE

CROW BENEFIT

1.0 INTRODUCTION

Discussion of possible changes to the existing Western Grain Transportation Act (WGTA) has been going on for some period of time. Therefore, Manitoba must be in a position to respond to any proposals put forward from the federal government and must be in the position to pro-actively put forward its recommendations regarding a desirable MOP, from Manitoba's perspective. Only by being in an informed position regarding this very complex matter, with its inter-related impacts on a wide variety of sectors of both the economy and the farm community, can Manitoba be in the position to ensure that its full future potential is achieved.

A change in the method of payment of the Crow benefit to producers, rather than to the railways, as at present, would have significant long term impacts on a wide variety of sectors within the agriculture and related industries in Manitoba. A number of alternatives have been proposed as methods of payment to the producer by many groups and individuals over the past decade. Each of these many potential methods of payment has varying characteristics and impacts. Therefore, in order to analyze the impacts of the various alternatives it is necessary to note both the fundamental characteristics of any pay the producer method of payment and the impacts of each of the alternative methods of payments (MOP).

Therefore, this portion of the discussion paper provides information on the possible approaches which could be taken for issuing the Crow benefit payment to producers. This discussion paper should be examined as part of the ongoing process of providing information, encouraging discussion, and soliciting feedback by the Agricultural Advisory council.

2.0 TERMS OF REFERENCE

This study reviews the range of characteristics which comprise alternative MOPs and analyzes the impact of those characteristics such that the understanding of the consequences of any individual characteristic or combination of characteristics can be foreseen. This approach will allow the readers to identify the most desirable combination of characteristics which could be included in a payment system under a change in the method of payment.

A number of issues hold potential to be very divisive or to be major constraints regarding the implementation of a pay the producer method of payment. The issues will each be discussed in order that decisions can be made with an informed background, regarding the implications and consequences of each of these issues.

3.0 IDENTIFICATION OF RANGE OF CHARACTERISTICS

Analysis by the consulting team and review of previous pay the producer proposals indicates that a large number of characteristics may be used to describe the alternative MOPs. Eleven characteristics have been identified. Each characteristic has a number of possible alternatives. The thirty to forty alternatives under these characteristics make it very complex to analyze all possible combinations. In order to conduct the analysis in a thorough and yet structured manner the characteristics will first be identified and then each will be briefly defined with a listing of alternatives under it.

The characteristics which form pay the producer alternatives are as follows:

- Annuity vs. bond vs. program payment
- Length of payment period
- Size of payment
- Transferability
- Transition period
- Dilution compensation
- Delivery mechanism
- Tax status
- Base period for calculation of payment
- Receiver of the payment
- Basis for calculation of payment

For each of these characteristics a wide range of alternatives will be listed. Those which are unlikely to be feasible are noted in the section analyzing the impact of the characteristics.

3.1 Annuity vs. Bond vs. Program Payment

Payment of the Crow benefit to the producer can be authorized in several different forms, by the federal government. Each of these forms would have different implications and impacts.

3.1.1 Annuity

- an annuity is a payment structured to pay out the net present value plus interest over a set period of time. The term of the annuity will be a factor in determining how large the payments will be, with shorter terms creating larger payments.

3.1.2 Bond

- this form of payment is defined as a contractual financial obligation of the federal treasury. Either a special issue of bonds or an issue of Government of Canada Bonds could be made in order to pay the producer. The structuring of the bond issue could include an immediate redemption feature allowing the payment to be the equivalent of a lump sum. Alternatively, the bond could include features which discourage an immediate redemption and the annual payment of interest could be structured to make the Crow benefit payment to producers on a constant basis over a number of years. Another alternative is a change in size of payments over time, such as a gradual reduction during a set time period, if the payment was to have a sunset clause.

3.1.3 Program Payment

- defined as a financial authorization procedure which retains the program as a discretionary expenditure of parliament. This is typical for most government programs, including the existing Western Grain Transportation Act. The program payment of the Crow benefit to producers could be structured with any size of payment over any period of time.

3.2 Length of Payment Period

3.2.1 Lump Sum Payment

- defined as the net present value of future payments converted to a single one-time immediate payment. The size of the payment will depend upon the interest rate and the assumed term of the existing payments.

3.2.2 Payment Period With Sunset Clause

- defined as a payment period with a specific ending point when the payments would cease. It is possible for such a sunset clause to range from as short a time period as five years, through to a longer period of twenty or more years.

3.2.3 Perpetuity

- defined as a payment which would continue on in the future indefinitely.

3.3 Size of Payment(s)

3.3.1 Equal To Or Larger Than Existing Crow Benefit

- defined as a payment, of any form or structure, which pays out the equivalent of, or more than, the existing Crow benefit payment now made to the railways. A payment of this size would allow for continuation of the federal government's support now provided and, if larger than the existing Crow benefit, it would potentially compensate for some of the effects of dilution.

3.3.2 Less Than Existing Crow Benefit Payment

- defined as a payment smaller than the present benefits and therefore, creating reduction in the overall level of support from the federal government.

3.4 Transferability

3.4.1 Non-Transferable

- defined as being paid to either the individual farmer or to the owner of specified land holdings and non-transferable to any other, for any reason, at any time.

3.4.2 Transferable

- a transferable payment would allow the person receiving it to sell the rights to future payments. This would increase the liquidity of the payment. Options include being transferable only with land title transfers,

or only to members of the family, or to any others. These alternatives impact on inter-generational transfers of farms.

3.5 Transition Period

3.5.1 Immediate Change - No Transition Period

- defined as changing from the existing WGTA payment to the railways to the new MOP immediately upon the change being implemented.

3.5.2 Short Period of Transition

- defined as a period lasting from 2 - 5 years for a gradual transition from the existing method of payment to the railways to the new pay the producers system.

3.5.3 Long Transition Period

- defined as a period of more than 5 years during which the change from the existing WGTA methods of payment to the new pay the producer MOP is gradually implemented.

3.6 Dilution Compensation

3.6.1 No Compensation

- defined as no payment in excess of the existing Crow benefit to compensate producers who see adverse impacts due to the effect of dilution.

3.6.2 One-Time Compensation

- defined as a one-time payment of an amount to compensate for the effects of the dilution.

3.6.3 On-Going Compensation

- defined as payments to compensate producers for the reduced payments per tonne (i.e. dilution) which could occur under some alternative payment mechanisms. Those alternatives which broaden the base upon which payments are made, beyond the existing WGTA eligibility, will create varying degrees of dilution.

3.7 Delivery Mechanism

3.7.1 Direct Payment

- defined as a payment direct to the producer.

3.7.2 Freight Credits

- defined as credit accounts which may be drawn upon to reduce the charges for freight. These credits could be established for rail freight only or for a variety of modes of transportation.

3.7.3 Hybrids

- defined as a payment system which utilizes both direct payments and freight credits. The producer could select either one, and any amounts remaining in the freight credit at the end of the year could be taken as a direct payment.

3.7.4 Stabilization Programs

- defined as payment into income stabilization programs. Alternatives include WGSA, a separate but similar program to WGSA, the individual safety net concept developed via Grains 2000, or others.

3.8 Tax Status

3.8.1 Taxable

- the present Crow benefit is, in effect, taxed as the reduced freight rate increases grain prices. These higher prices add directly to farmers' taxable income. Therefore, the Crow benefit is presently taxable.

3.8.2 Deferred Tax Status

- defined as being eligible for special tax treatment through deferring the taxes due. An example would be to transfer to an RRSP, as is presently allowed for some pension income.

3.9 Base Period for Calculation of Payment

3.9.1 Future Periods

- with future periods the calculation of the payment would be based upon the circumstances during that future period, i.e., the sales or the acres which will exist at some point in the future. A three year rolling average, each individual year, or any other type of period could be utilized.

3.9.2 Historic Periods

- defined as any time period prior to the implementation of the new method of payment. A selected time would be utilized to calculate the payment and from that date forward the payment would remain unchanged.

3.10 Receiver of the Payment

3.10.1 Land Owner

- defined as the Crow benefit payment being made to the owner of the land.

3.10.2 Producer

- defined as the payment going to the person with financial, labour, and managerial input into the farm's production.

3.11 Basis for Calculation of the Payment

3.11.1 Statutory Grains Shipped Under WGTA

- defined as grains included in Schedule I eligible for WGTA rates, i.e., for export.

3.11.2 Net Sales of Statutory Grains

- defined as sales of grains from the farm less purchases of grain and grain based feed. Payment could be based upon sales, including or excluding dockage.

3.11.3 Gross Sales of Statutory Grains

- defined as all sales of statutory grains from the farm.

3.11.4 Production of Statutory Grains

- defined as all production of statutory grains whether fed on the farm or sold.

3.11.5 Harvested Acres

- defined as the acreage of statutory grains harvested. This will be very similar to the production basis, but, will be expressed in acres.

3.11.6 Cultivated Acres

- defined as the acreage in statutory grains and summerfallow.

3.11.7 Arable Acres

- defined as the acreage used for the production of statutory grains, summerfallow and improved hay and pasture.

3.11.8 Total Acreage

- defined as the total acres held including both arable and unimproved.

3.11.9 Productivity Indexed

- defined as the use of, on any of the acreage basis alternatives, an adjustment factor to reflect the productivity of the land.

3.11.10 All Farm Sales

- defined as a payment based on all sales of farm produce including not only grains, but livestock and livestock products.

3.11.11 Current Producer Payments Under WGTA

- defined as the amount paid by the producer in rail freight costs under WGTA. Calculation could also be on the basis of the government payments at present under the WGTA, i.e., Crow benefit.

3.11.12 Total WGTA Rates

- defined as a payment based on the total WGTA rates which the producer would be charged after implementation of pay the producer.

3.11.13 Revised CWB Pooling

- defined as a payment based on the change in freight costs faced by producers if a revision to the CWB price pooling system was to occur.

4.0 PAY THE PRODUCER ISSUES

Before presenting an analysis of the impact of the characteristics identified in the previous section, it is appropriate to discuss a number of issues related to pay the producer MOPs, regardless of which alternative is selected.

4.1 Equitability

Any change in the MOP will be looked at by farmers from a perspective of its equitability, i.e., "am I being treated fairly?" The issue of equitability will be critical in having any change in the MOP accepted by farmers. Unfortunately, there are a number of different view points as to what is equitable.

One perspective is that of the status quo. In this case, individuals will look at the existing Crow benefit and will analyze their perception of whether they are "winners" or "losers". If it is perceived that the Crow benefit payment does not fully compensate them for the adverse consequences of increased freight rates, then an inequity is perceived. This perspective of equitability relates strongly to the dilution effect, whereby some producers perceive that they are not fully compensated and are, therefore, "losers". Strong resistance to the proposed change may be expressed by this group.

Another perspective of equitability relates to the views of various interest groups, such as livestock producers or grain producers. If one group views the other as having preferential treatment and envies their position, then it is perceived that they have not been treated equitably. In this case, strong views will develop which may not resist the change per se, but rather may advocate that other alternatives be utilized.

The issue of equitability will be a major, if not the major, factor in the process of generating any consensus for reaching a decision regarding a possible change in the method of payment.

4.2 Resource Neutrality

Resource neutrality can be defined in a variety of ways including allowing geographic areas or industry sectors with a comparative advantage to flourish and not be disadvantaged by either regulatory restrictions or by subsidy related distortions provided to other areas or other sectors. An example is the beef industry in Manitoba, disadvantaged through support and assistance programs in other provinces, especially Alberta.

Resource neutrality is related to both production decisions and marketing decisions and dictates that both must be made based on the influence of an undistorted market place.

The existing WGTA rate structure is viewed by the livestock sector and some processing sectors as distorting the production and marketing decisions made by producers. Therefore, these groups see resource neutrality as a principle which should be utilized when examining any change in the MOP.

4.3 Dilution Effect

<u>The Equitability vs. Resource Neutrality Dilemma.</u>

During the past decade, many alternative pay the producer MOPs have been designed. There appears to have been a strong desire in these designs to accommodate both the concerns that arise from the equitability issue and the concerns which arise from the resource neutrality issue. To accommodate the issue of equitability, alternatives have been suggested which target the Crow benefit payment to those producers who have historically received the benefit of the WGTA rates for their shipments of statutory grains. However, this alternative MOP has created concerns from a resource neutrality perspective for those who have felt that this alternative would continue to distort production

and marketing decisions, with an adverse affect on a number of sectors, including livestock and processing.

Other suggestions have been presented for alternative MOPs, such as payments based on arable acres, which reduce the influence on producers' production and marketing decisions. Under this alternative, it was felt that producers would have a much broader range of production options which would be eligible for the payment and that marketing decisions would not be influenced by the payment. However, these MOP alternatives create concerns from an equitability perspective for those who have received the Crow benefit in the past and will no longer be the sole recipients while others, who produce crops which are now eligible and previously were not, will receive a benefit.

The concerns regarding equitability from this status quo perspective of "winners" and "losers" occurs due to the dilution effect. The dilution effect occurs due to the Crow benefit being distributed to a broader base than occurs at present.

Level of Effect

The dilution effect can be quite significant, depending entirely upon which alternative basis for calculation of the payment is selected. To illustrate the possible extent of the dilution effect it has been assumed the total federal government payment is fixed at $720 million and the following three alternative bases for calculation of the payment have been selected:

(i) Payment based on grain shipments eligible under WGTA.

The average volume of Manitoba grain on which WGTA payments have occurred is 6.182 million tonnes for the 1984/85 - 1988/89 period.[2] This

[2] Source: National Transportation Agency.

would be the base on which payments would occur. In Manitoba a typical increase in the freight rate charged to a producer, with a change to a pay the producer method of payment, could be approximately $17.60 per tonne. For illustrative purposes it is assumed the payment would also be this amount of $17.60 per tonne.

(ii) Production of Major Grains

The base under this alternative would, using the five year average for 1984 to 1988, expand to 7.48 million tonnes[3], up by 21% compared to shipments eligible for WGTA. Thus, to maintain the same payment per unit the total amount of the Crow benefit payments would have to grow 21% compared to the first alternative presented above. If the total Crow benefit payment of $720 million is fixed, the payment per tonne would fall from the $17.60 shown in the first alternative above, to a level of $14.55 per tonne. This lower level of payment per tonne would be paid on the larger volume to still pay out $720 million. Assuming a weighted average yield for all crops of 0.7 tonnes per acre the $14.55 per tonne would amount to $10.19 per acre.

The cost of compensating producers, by maintaining the payment level at $17.60 per tonne could be up to $30 million in Manitoba, under this particular alternative.

[3] Source: National Transportation Agency.

(iii) Arable Acres.

In 1987 in Manitoba approximately 13.347 million acres were classified as improved or arable acres.[4] This is 27% larger than the 10.515 million acres which were utilized for grain crops or fallow under the alternative (ii) above. If the total Crow benefit payment of $720 million was fixed, then the payment would fall to $8.02 per acre from the $10.19 per acre in alternative (ii) above. Thus, the dilution effect could reduce payments, as shown in this illustration, by up to 35 per cent.

The cost of compensating Manitoba producers for the impact of dilution could total, in this example, up to approximately $75 million. If fully compensated the farm sector could receive both the existing level of Crow benefit, plus the additional dilution compensation. A number of issues become apparent under this situation, including additional pressures in the GATT negotiation, depending on how the payment was structured, i.e. if it was not resource neutral. These examples, shown above are only three out of many alternative bases for calculation of the payment, each with its own level of dilution.

Historical Period for Calculation of the Payment

The consulting team examination of this issue, in the context of the examination of the other characteristics of MOPs listed in the previous section, has identified a fundamental characteristic which may reduce the conflict between equitability and resource neutrality.

If the payment under any MOP alternative is based upon future time periods, there will be substantial difficulties with resource neutrality. Whether based

[4] Source: Manitoba Agriculture Yearbook

upon exports, arable acres, or other bases, producers will have their production and marketing decisions influenced by the Crow benefit payment if the payment is based upon future periods. Therefore, the use of a historic time period, for calculation of the payment, will prevent producers' decisions from being influenced by the payment.

If a three year, or five year, or any other period of time prior to implementation of the change in the method of payment is used to calculate the payment, and if this base period remains unchanged, such that the payment remains unchanged regardless of the producer's future production and marketing decisions, then any basis of payment will be resource neutral, including a payment based on "exports". With this combination of characteristics, i.e., an historic base period and the payment calculated upon the basis of "exports", the concerns regarding both the perception of equitability by those who are concerned about being "losers" and the resource neutrality issue, by those such as the livestock sector, could be accommodated. Some producers who produced statutory grains and sold them locally could see their grain price fall with a change to a pay the producer system and could be without a Crow benefit payment. A compensation system might therefore be required.

Individual Influences

With any MOP there will be some degree of dilution. Even with a payment based upon an average level of statutory grains shipped under WGTA, some producers would receive payments which might not perfectly match their most recent experience. Therefore, a discussion of the dilution effect is presented to clarify its impact at the individual farm level. The dilution effect does not reduce total payments to the farm sector, but rather redistributes the payment. The adverse impacts of the dilution effect might almost entirely rest with those who have sold statutory crops, locally, or for export. There would be an equal

and off-setting benefit to farmers who produced nonstatutory crops, livestock, or other crops and who were eligible to receive a payment.

At the individual farm level, the financial influences could have a significant impact if the farm's "production profile" does not match the average profile utilized in calculating the payment. The adverse influence could most affect those farmers who historically had utilized a larger portion of their arable acres for the production of statutory grains which were shipped under WGTA, while the positive influence could affect those farmers who had utilized a lower than average percentage of their land for the production of statutory grains which were shipped under the WGTA.

For instance, for a 1,000 acre farmer; utilizing all available land to produce statutory crops, e.g. barley, for shipment under WGTA; a payment based upon exports could (assuming yields of .7 tonnes per acre and payments of $17.60/tonne ($12.32/acre) of exports and $8.02/arable acre) generate $12,320 vs. only $8,020 if the payment is based on arable acres. However, another farmer with all land utilized for production which is not shipped under WGTA, e.g. alfalfa or any grain fed on the farm, would prefer a payment based on arable acres as he/she would then receive a $8,020 payment vs. nothing if the payment was based upon exports.

If the payment of the Crow benefit is paid only on the basis of individual parcels of land, to the owner or perhaps the renter, and the payment is dependent upon owning, or using, that parcel of land; the adverse or positive influences of the dilution effect would be associated with each parcel of land. Therefore, the land value would be effected by the positive or adverse influence of the dilution effect. Other alternative MOPs may not tie the receipt of the payment to the ownership, or use, of the land and in these cases the positive or adverse influence would not affect the land values even though the farmer's financial position would be subject to the positive or adverse influence.

With a MOP based on exports or on net sales of statutory grains, it is more difficult to relate the payment to individual parcels of land and the payment could be directed to an individual, with no relationship to the land owned or utilized. In these cases, there would be little influence on land values, at the individual farmer level.

Regional Influences

Regional influences would also occur due to the dilution effect. If a particular area has agronomic or other factors which cause the area to have a significantly different production profile from the average, then the region would receive adverse or positive impacts from the dilution effect. Areas with a low portion of land utilized for the production of statutory crops for shipment under WGTA ("exports") would receive positive effects from a payment based on arable acres. However, this MOP will generate negative influences for regions which have a high portion of the land utilized for export of statutory grains. The influence can be very significant as the production profiles of regions vary dramatically. For instance, when crop district 1 is compared to crop district 11 in Manitoba, the degree of variation is evident. Crop district 1, utilizing payments calculated for Waskada, and crop district 11, utilizing payments calculated for Arborg, have the key factors defined as below.

	Crop District 1	Crop District 11
Payment Per Acre Exports[5]	$12.01	$14.03
Export as Percent of Total Production[6]	75.03%	37.39%
Statutory Grain as Percent of Arable Acres[7]	81.58%	67.30%
Payment Per Arable Acre	$ 7.35	$ 3.53

As shown, if a payment is calculated based only upon the acres utilized for "exports", approximately 61% of the total acres in crop district 1 would receive the payment, while only approximately 25% (37.39% times 67.30%) would receive a payment in district 11. If a payment is calculated based on the provincial average "exports" as a percentage of total production and on acres in grain production as a percentage of arable acres, then Arborg would gain, having a small portion of the acres facing the increased freight rates while receiving a payment on all the arable acres. For example, using hypothetical numbers, if across the province, the average payment based upon "exports" was $13.00 per acre and the payment per arable acre was $8.00, then crop district 11 would be very interested in receiving a payment based on arable acres. Instead of receiving $3.53 per acre, they would receive $8.00 which, on the 658,731 arable acres in the crop district, would generate an extra $2.9 million of payments coming into the crop district. Obviously, there will be strong regional interests, as well as individual interests, in trying to obtain the preferred basis for the payment.

The cumulative effect, adverse or positive, would influence the financial strength of the region and influence land values. Even if the payments are directed to

[5] Based upon: • Assumed Crow benefit payment equals government portion of 1989/90 WGTA rates.
• Weighted average yield for crop mix in crop district.

[6] Source: Canada Grains Commission.

[7] Source: Manitoba Agriculture.

the farmers, unrelated to the specific land owned or utilized, there would still be general influences, perhaps significant, on the land values. If the payments are related to individual parcels of land, then the influence on land values would specifically relate to the land's suitability for production of statutory grains for export vs. its suitability for production of other crops.

4.4 GATT and CUSTA Implications

International trade considerations relate largely to the potential for countervail actions or for weakening the negotiating position regarding the GATT/MTN. These considerations relate largely to resource neutrality.

U.S Subsidy levels exceed Canadian levels and under the Canada U.S. Trade Agreement, wheat, oats and barley cannot enter Canada without an import permit until such time as calculations confirm that the U.S. levels levels have decreased to the equivalent of the Canadian levels on a per tonne basis. When this occurs, the U.S. grains will be able to enter Canada without import permits.

A change to pay the producer might affect these subsidy calculations. If a payment method increases the calculated level of the subsidy, even in the short term, U.S. imports might be permitted. Once permitted, would they again be prohibited in future years if the calculations were to show subsidy levels higher than those in Canada? As yet the answer to this is uncertain. The dilution effect and any proposal which involves increased payments, but for a shorter period of time, could have significant consequences in this area.

5.0 ANALYSIS OF IMPACT OF CHARACTERISTICS OF PAY THE PRODUCER METHODS OF PAYMENT

5.1 General Impacts

A number of general impacts occur as a consequence of a change to pay the producer. These general impacts are described in this section prior to a more specific analysis.

5.1.1 Impact on Land Values

Implementation of a pay the producer method of payment could significantly change producers expectation of future income from land purchases. Thus, land values would be impacted.

While a change in the method of payment is a very significant change the impact will depend entirely on two aspects.

The first is whether the payment is more than or less than enough to compensate for the net decrease in profits farmers face due to higher freight costs and reduced grain prices. If, as will occur in some cases, the payment is insufficient to fully compensate, then the combined result will leave the farmer worse off and land values may decrease. In other cases the farmer may be better off and land values could increase.

The second aspect is whether the payment is paid based on the land or paid to a person regardless of the land. If the payment is not tied to the land then even though farmers may, in the end after the payment, be no worse off; they may not wish to buy land with its lower profits and this may lead to lower land values.

5.1.2 Tax Consequences on Producers and Rural Municipalities

A change in the MOP could decrease land values, although the extend of the impact will vary widely and depend upon how much:

- grain prices decrease due to the increased freight rate,
- the payment is not attached to the land and is insufficient to offset the freight rate increase, and
- the shifts in production, marketing, transportation, and the "market absorption" (see Section II of the paper) factors are insufficient to maintain profits from the land.

If farmland values decrease the assessed value will also decrease over time, when reassessed. Reduced tax revenues for the municipalities and reduced property taxes would result. Municipalities would cut their budgets or increase mill rates. With higher mill rates all property owners would see the increase in mill rate. This would occur until tax revenues returned to their previous level. With reduced farmland assessment and all other property at the same value as assessed originally, there would be a shift of tax from farmland to other properties.

In communities where processing or other related facilities expanded, the decreases in farmland assessments would be reduced. These municipalities could see grain farmers carry reduced levels of property tax.

5.2 Areas of Impact Analysis

The analysis of the impact of the eleven characteristics defined in Section 3 will focus on the following areas:

- land values
- equity (financial)
- farm debt
- farm intergeneration transfers and farmer retirement
- resource neutrality
- diversification and increased value added secondary processing
- transportation system efficiency

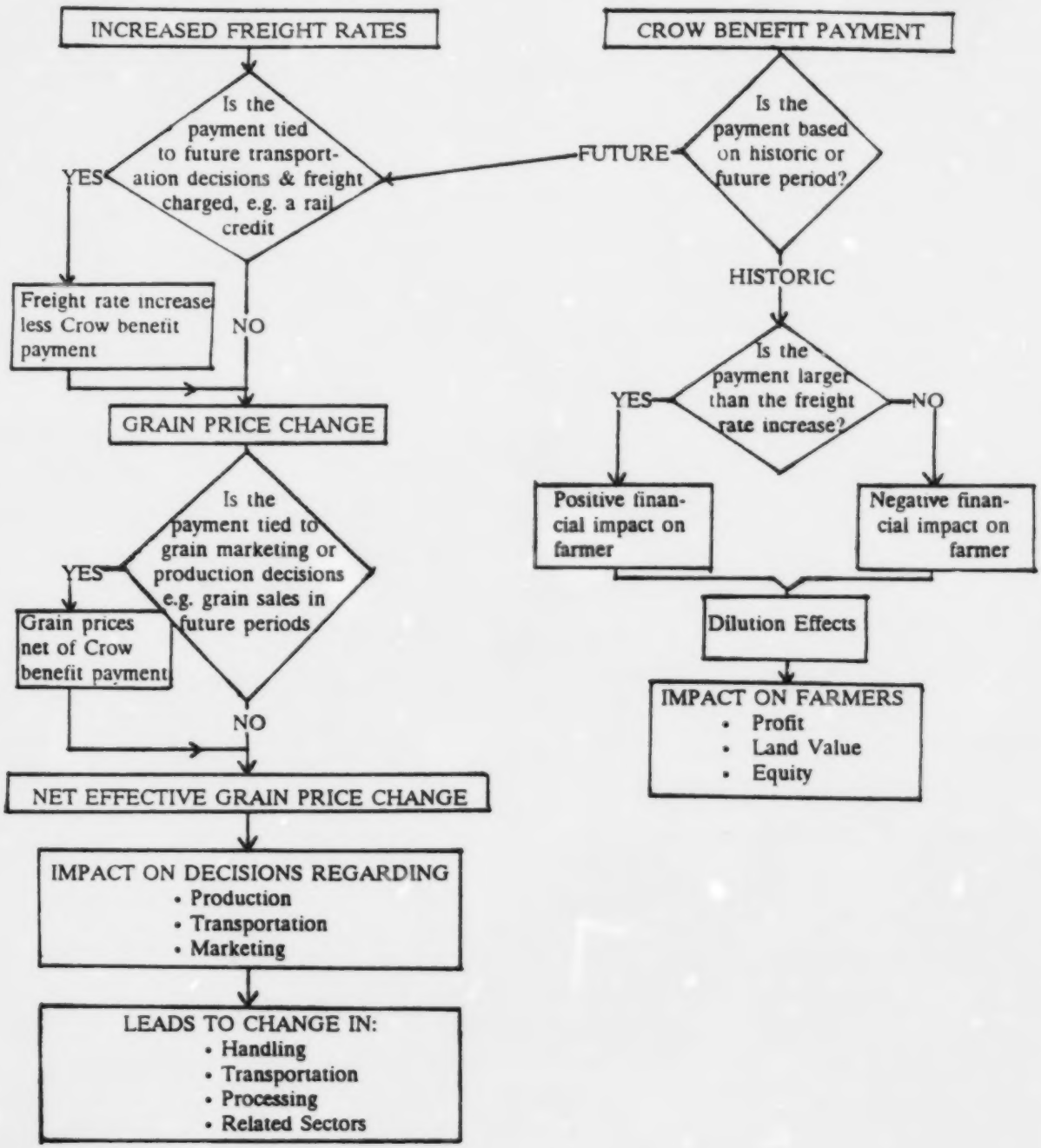
Before presenting the detailed analysis of the alternatives under each characteristic for each of these areas it is important to understand that the impact from any change in MOP occurs due to one or both of two factors. The first factor of change is the increased freight rate to be paid by the farmer. The second factor is the Crow benefit payment that each farmer will receive. This relationship is graphically displayed in Figure 1.

The increase in freight charges will result in decreased grain prices. For grains which are shipped by rail for export, the prices will initially drop and will eventually, in some cases, recover to some extent. Even if the farmer received a payment to exactly offset this increased freight charge, an impact would result. If the payment is independent of the production, transportation and marketing decisions, i.e. if it is resource neutral, the farmer would still make changes in order to maximize profits under the new and higher freight rates.

Production shifts would occur from low value per tonne crops such as oats or barley, to high value crops, such as canola or flax. Shifts to crops used as feedgrains, which can be used locally and avoid high freight charges, would also occur.

Modes of transportation and routes would change. For example, high cost rail lines could see commercial trucking increase. Some branch lines would not be economic for rail transportation and would shift to trucks.

Figure 1.
TWO FACTORS CREATING CHANGE: FREIGHT RATE AND THE PAYMENT



Market shifts would also occur. Feeding of livestock would increase as would truck shipments to oilseed crushers, feed mills and other processors in the U.S. and eastern Canada.

All these production, transportation and market shifts are dependent on the extent of the net effective grain price change. If the payment is resource neutral, e.g. an historical period is used as the basis of the calculation of the payment, then these production, transportation and market shifts are dependent solely on the freight rate increase, as displayed in the left column of Figure 1.

The Crow benefit payment will only influence the above management decisions of producers if receipt of the payment depends on the producers' actions regarding transportation, marketing or production decisions in future years. If this was the case, it would be most undesirable from both an administrative feasibility and a resource neutrality perspective.

The financial impact on the farmers is influenced independently from the above shifts. This financial impact is created by two characteristics of the payment. One is whether the payment is generally sufficient to compensate for the increased freight charged to the producer. The second characteristic occurs due to individual farmers not being "average", with "average" being defined as matching the production profile used when calculating the payment. For example, if the calculation of a payment was based on arable acres and assumed 60% cropped, 20% fallow, and 20% hay, a farmer with that profile would always receive Crow benefit payments to exactly compensate for changing to pay the producer, if the general payment exactly compensated. That farmer would not care how the payment was calculated. However, other farmers in the same area, one with 100% exported crops and another with all hay and fodder, would have very strong interests. With the dilution effects being very significant, a 1,000 acre farmer may see a $5,000 difference in payment received depending on the basis of payment. The understanding of which factors and

combinations of factors create which impacts is critical to the analysis of alternative pay the producer MOPs.

5.3 Analysis of Characteristics

The analysis of the impact of each alternative of each characteristic of a pay the producer MOP will be dealt with, as opposed to attempting to analyze the impact of fully described alternative MOPs utilizing all eleven characteristics in various combinations. The 40 alternatives listed under the eleven characteristics can be combined in a large number of combinations making it nearly impossible to cover all of these combinations. Therefore, the analysis is presented for each characteristic, covering each of the alternatives under that characteristic and noting the interactions which occur.

5.3.1 Annuity Versus Bond Versus Program Payment

5.3.1.1 Annuity

With an annuity the term could be specified to be any period from short, say 3 or 4 years, to very long, say 40 years. With shorter terms the annual payment would be larger, however, the shorter term means the payment would cease at an earlier date.

The following example is provided to define an annuity vs. an annual program payment of $720 million to perpetuity.

An annuity payment with 10% interest rates and a net present value of $7.2 billion would pay the following amounts depending on the period of the annuity:

- 5 years - $1.90 billion per year
- 10 years - $1.17 billion per year
- 15 years - $0.95 billion per year
- 20 years - $0.85 billion per year
- 25 years - $0.80 billion per year
- 30 years - $0.76 billion per year

A ten year annuity would have a payment 63% larger than the $720 million annual program payment. This Crow benefit payment, while only lasting ten years, would offset the increased freight rates and also create increased revenues to some farmers while for others it could compensate for the effects of the dilution and provide funds for restructuring, eg. expanding livestock production, etc..

The impact on land values could vary widely. With a 10 year annuity and a payment 63% larger than the existing Crow benefit farmers could be better off in the short term. If the payment is attached to the land then farmers would probably bid up land values in order to acquire the attached larger payments. However this would only occur for a few years until the 10 year limit on the payment approached. Then the land values would probably decrease due to payment ending after the 10 year period.

It is possible to design a payment which would reduce over time. A gradual phase out could be preferable to a sudden end to the payments.

5.3.1.2 Bond

Paying the Crow benefit through a bond could have several unique impacts. After the bonds were issued, the use of Government of Canada bonds would provide a low profile for the payment, in terms of international trade negotiations, as the annual interest payment of, say $720 million, would go out with the balance of the interest payments issued by the federal government on these bonds. Also, once issued in this form, the expenditure would be a contractual financial obligation and would no longer be subject to discretionary program decisions by Parliament.

The use of a bond could provide financial and accounting benefits for the federal government if it were structured as a lump sum payment. While a program payment of a lump sum would have adverse accounting implications for the deficit, the use of a bond might be accounted for as a capital transaction. Thus, only future interest payments would show as expenditures, thus reducing the short term impact on the deficit.

5.3.1.3 Program Payment

This type of expenditure authorization is the norm for the federal government payments. However, it limits the certainty of future payments, as the program is subject to discretionary cuts in expenditures. Also, this form of payment would make it difficult for recipients to assign and therefore transferability would be limited.

5.3.2 Length of Payment Period

5.3.2.1 Lump Sum Payment

A lump sum payment would generate a sudden shock to Western Canadian agriculture.

The present value of the $720 million Crow benefit is approximately $7.2 billion. This represents approximately $50,000 for each of the 140,000 farmers on the CWB designated area, or, it equals over 50% of the farm debt outstanding on the prairies. It also represents approximately 20% of the value of land and buildings on the average farm.

With a lump sum payment farmers would have the financial resources to assist in making adjustments, eg. debt reduction, enterprise expansion, etc. However, immediate and rapid adjustments would be required as there would be no ongoing payments to compensate for the increased freight charged to producers.

5.3.2.2 Payment Period with Sunset Clause

A payment structured to occur for a set period of time and then cease would in all likelihood need to have larger payments than the existing Crow benefit in order to make it acceptable. In this case, the larger payments would have an impact similar to that described for an annuity with a relatively short term.

5.3.2.3 Perpetuity

An ongoing payment, intended to continue in perpetuity could continue even though circumstances, presently unforseen, might make another approach more desirable for achieving the objectives of the industry.

It should be noted that while a payment in perpetuity would provide compensation for the producer being required to pay the full WGTA rate at the time of the change, strong incentives would still exist for producers to attempt to increase profits and reduce their freight costs through shifts in production, transportation, and marketing.

5.3.3 Size of Payment(s)

5.3.3.1 Payments Equal To or Larger Than Existing Crow Benefit

A Crow benefit payment equal in value to the existing Crow benefit would have an impact similar to that described for an annual program payment. A payment larger than the existing Crow benefit would have impacts similar to that described for a short term annuity, where the payments would be larger.

5.3.3.2 Less Than Existing Crow Benefit Payment

A payment smaller than the existing Crow benefit would have an adverse financial impact on grain producers as the payment might not fully offset the decreased grain prices caused by the increased freight costs. This may not have any impact on land values by itself, for if the payment is not tied to the ownership or use of the land, the change in freight rate will have the sole impact on land values. The potential adverse financial impacts on individual producers could be significant if the payment fell far short of their decreased revenues due to higher freight rates.

5.3.4 Transferability

5.3.4.1 Non-transferable

A payment which was absolutely non-transferable would always be paid to either a person or a particular piece of land (i.e. to its renter or owner).

If paid to an individual, the payment would continue to be made to them even if retired and would cease upon their death. Over time, retired farmers would receive a significant portion of the payment and eventually the level of the total payments would fall as individual payments ceased.

5.3.4.2 Transferable

Transferable payments would increase the efficiency of the payments as farmers would each be able to determine the most efficient use in their own specific circumstances. Those who wish ongoing payments could retain them while others could transfer (sell) the rights to the payments and take immediate cash in return. They could then use this cash for reducing debt, expanding a livestock enterprise, building a retirement fund, or any other purpose which best suited their needs. This characteristic would apply whether the payment was in the form of bonds, annuities or annual payments.

Payments could also be structured with limited transferability, such as only to family members or other specific groups.

5.3.5 Transition Period

5.3.5.1 Immediate - No Transition Period,

5.3.5.2 Short Period of Transition, and

5.3.5.3 Long Transition

A transition period, for any change, will reduce the adverse consequences. A sudden change with no transition period, would create a shock for producers and other sectors of the industry as they would not have time to plan for the necessary changes. Thus, a transition period with a clear plan for all changes would minimize adverse consequences for farmers and others.

5.3.6 Dilution Compensation

5.3.6.1 No Compensation

If all farmers were to receive compensation payments, those who have windfall gains would increase the level of their windfall, i.e., those who would receive a Crow benefit payment but who had not benefitted from the WGTA rates, eg. alfalfa producers, would receive a compensation payment, unless it was targeted in some manner.

However, if compensation payments were to be targeted the individual situation will need to be documented and administration of this process would be very complex. Also, many producers who do not receive this compensation would perceive that they were entitled to.

5.3.6.2 One-Time Compensation

Targeted compensation could create benefits for farmers who must adjust to the new system. Farmers undergoing the greatest change and being forced to adjust production and marketing resources the most, will be those who face the largest change in freight rates. These producers are likely to be adversely impacted by any dilution effect. A one-time compensation payment to offset the dilution effects would provide financial resources needed for these producers to make adjustments in production or marketing.

5.3.6.3 On-Going Compensation

An on-going compensation payment would not reduce the financial incentives for change in the production, transportation and marketing decisions of producers if structured to be resource neutral. This is related to the factors displayed in Figure 1. However, a compensation payment would have psychological implications. Producers would perceive the compensation payment as future security, reducing the urgency for change, causing the shifts in production, transportation and marketing to occur more slowly.

5.3.7 Delivery Mechanism

5.3.7.1 Direct Payment

Farmers would have the greatest control over the use of the financial resources with a direct payment. This would tend to improve the efficient allocation of the Crow benefit payment for use in farm production, marketing or debt adjustments.

5.3.7.2 Freight Credits

Freight credits, utilizing credit accounts which could be drawn upon to reduce freight charges, could apply to rail freight only or to any other modes of transportation. If the credit were restricted to one particular mode, such as rail, distortions would occur, as an incentive would exist for that particular mode to the detriment of all others. The use of freight credits would not be resource neutral. It would encourage the sale and shipment of grain, since only through the use of freight, would the credit be available and grain fed on the farm would not receive the payment.

With a system of freight credits, the total annual costs would be unknown until the end of the year due to volume fluctuations. Alternatively, each producer could have an established maximum beyond which, the producer would pay the total freight. This would mean a sudden increase in freight rates which would disrupt normal transportation and marketing flows.

5.3.7.3 Hybrids

This delivery mechanism combines the use of direct payments with freight credits and reduces the distortions of a freight credit system. However, to the extent that freight credits are utilized, those difficulties still occur and administrative complexity is increased.

5.3.7.4 Stabilization Programs

Utilizing stabilization programs as a delivery mechanism would increase the funding available in times when farm incomes have been reduced. As income stabilization is a significant issue in the grains sector, the additional resources utilized in this manner would be desirable. However, with this form of payment not initially being received by farmers and not immediately offsetting the increase in freight rates, the financial shock of

a change in MOP may be increased in the short term. Also, many producers may be concerned whether they receive their "entitled" payment. The use of an individual safety net such as developed through Grains 2000, could assist in overcoming the issue of individual allocations. An additional concern exists, that with the addition of the Crow benefit into income stabilization programs, the perceived need for additional federal government funding in times of need may be reduced, thus reducing the overall level of support to the grains industry.

5.3.8 Tax Status

5.3.8.1 Taxable

Under the existing method of payment the reduced freight rates increase farm profits and therefore are directly taxed in the hands of the farmers. Therefore, a precedent exists for having the Crow benefit payment taxable.

5.3.8.2 Deferred Tax Status

A deferred tax status could be provided for Crow benefit payments. Some or all of the payment could be transferable to an RRSP as is presently allowed for some pension income. This could increase the net benefit to farmers. However, the federal government would look at the expenditures as a gross expenditure as opposed to a net with some recovery of tax.

If a lump sum payment was issued, taxation would become a major issue, as many farmers would face very high marginal tax rates. A 1,000 acre farmer could receive a $150,000 payment which would place him/her in the highest marginal tax bracket. In this case an averaging period of perhaps five previous years and five future years plus some transfer of the payment into an RRSP might need to be allowed.

5.3.9 Base Period For Calculation of Payment

5.3.9.1 Future Periods

The use of future periods for the base period of collecting data for the calculation of the Crow benefit payment would lead to significant difficulties in terms of administration and resource neutrality. Using future periods would provide a strong incentive for each producer to make production and marketing decisions which would maximize the payment under the new MOP. For example, if the payment was based on exports, an incentive would exist to maximize exports, to the detriment of domestic processing. With a payment based on arable acres, an incentive would exist to "improve" marginal land which would not otherwise be cleared or broken, to make this land eligible for payments. This would be most unfortunate in creating serious soil conservation problems. With the increase in acres receiving a payment, the dilution effect would expand, thus decreasing payments per acre unless the federal government authorized increased expenditures.

The administration of payments based on future periods would be extremely complex, as new data would have to be gathered each year from each farmer and verified. Also, the payment would change each year based upon the new calculations.

5.3.9.2 Historic Periods

The use of historic periods would create a resource neutral payment, regardless of the particular basis of payment selected. If based upon an unchanging historic time period prior to the implementation of the new MOP it would mean the payment would not change in the future and therefore, farmers would have no incentive to make production,

transportation or marketing decisions to maximize the payment, i.e. "to farm the program."

As discussed under Section 4.3, the use of historic periods would reduce the difficulty in designing a payment to be both equitable and resource neutral.

5.3.10 Receiver of the Payment

5.3.10.1 Land Owner

With a change in the MOP to a pay the producer system, land values might fall, depending on how the payment is made. Payment to the landowner would compensate for any decrease in value. If the owner is not the operator of the land, the reduction in grain prices due to increased freight rates will lead to reduced land rents being paid. Thus the owner will, over a short period of time, see the returns on the land fall. The payment to the owner would therefore seem to be appropriate. Payments to the landowner would be administratively much easier and less costly as land title registrations and transfers could be fairly easily documented.

5.3.10.2 Producer

Payment to the producer would direct funds to the individual who faces the increased freight rate. Typically, the producer is also the landowner. In cases where the owner is not the producer, the payment to the producer would tend to increase the returns from production and, therefore, maintain higher levels of land rent. Thus, the end result may be similar to issuing the payment to the owner. However, payments to the producer would be much more difficult to administer and document as relatively few rental agreements are formally registered.

5.3.11 Basis for Calculation of the Payment

Of the fourteen alternatives identified under this characteristic, a limited number represent the key differences among all of them. Therefore, to simplify the presentation of the analysis a limited number of alternatives will be presented.

5.3.11.1 Statutory Grains Shipped Under WGTA

This basis of payment is the most similar to the existing situation. However, if the payment was based on an historic period and thus is made in a resource neutral manner, i.e. not tied to the production of grain, the shipment by rail, or exporting; then even with this basis of payment the major changes and structural adjustments in production, transportation and marketing will occur. With the payments based on historical volumes of statutory grains shipped under WGTA and the historical period being utilized, thus keeping the payment resource neutral, the increase in grain freight rates using the rail system would cause the producer to be motivated to maximize profits by making different management decisions regarding what to produce, how or if to transport it, and what market to utilize. This structural change to the industry would occur even though a "perfect" Crow benefit payment might provide payments to farmers to exactly compensate for the higher freight rates.

5.3.11.2 Net Sales of Statutory Grains

A payment based upon net sales of eligible grains, or any sales format of grains, will create distortions unless the payment is made on a resource neutral basis, i.e. historical time period. As stated previously, the use of future periods has a number of undesirable consequences.

The key aspect of utilizing a sales based payment is the dilution effect which would occur as the base for the payments is broadened from just shipments under WGTA to include domestic sales as well.

5.3.11.3 Arable Acres

A payment based upon arable acres, with or without a productivity adjustment, would have consequences similar to MOPs based upon production or other definitions of acreage. If the payment is made in a resource neutral manner, i.e. on a historical basis, the payment would not influence the production, transportation or marketing decisions of producers. The freight rate change would create those incentives. Therefore, the key difference of this basis of payment is the broadened eligibility for the payment and, therefore, the increased dilution effect. As discussed under Section 4.3 on the dilution effect, the dilution issue can be quite significant for some individual producers or particular regions. Farms which have historically produced statutory crops for export and which did that to a greater extent than the average on which the calculation of the payment is based, could see adverse consequences. Other farms or regions which ship grains under WGTA to a lesser extent than the average, on which the payment is based, could see positive impacts.

5.3.11.4 Revised CWB Pooling

A revision to the CWB pooling, whether to FOB St. Lawrence and Vancouver or otherwise would probably have a significant adverse impact upon Manitoba. A change in the CWB pooling to FOB Vancouver and St. Lawrence as opposed to the existing FOB Vancouver and Thunder Bay would adversely impact CWB grain prices in Manitoba by $12.67 per tonne. This assumes 60% of the grain moves west and freight and handling charges from Thunder Bay to the St. Lawrence are $21.12 per

tonne. This adverse impact on prices of CWB grains at all primary elevator points designated to ship east would convert to an equal value of positive impact distributed amongst all the volume of grain which is shipped through primary elevator points designated to ship west. If such a change has any possibility of occurring in the future, Manitoba has an interest in seeing the Crow benefit payment distributed on the basis of the total freight charges producers will face in the future, including this revision to CWB pooling. The revision to the pooling, with its $12.67 increase in freight and handling charges for grain priced FOB the East has a very major impact as it is very large in comparison to the increased freight rate due to a change to pay the producer, i.e. $12.67 due to a change in pooling and $15.00 to $19.00 change in freight rate due to pay the producer.

SECTION II

ANALYSIS OF PRODUCTION SHIFTS

6.0 INTRODUCTION

Agricultural production accounts for approximately 20 percent of the total value of all goods produced in Manitoba. Clearly, this sector is an integral component of the provincial economy, and any structural changes thereof have implications for not only the agriculture industry, but also the entire economy.

6.1 Economic Rationale Underlying the Major Production Shifts

If farmers were to incur a greater share of the real railway costs of transporting grain, two major production shifts would likely occur.

The first production shift would result from the effect of increased transport costs on farmgate grain prices in Manitoba. Prices would invariably fall for all grains, but the percentage by which they do so depends upon the unit value of the crop and the amount of freight rate increase, if any, the market is willing to absorb.

Increased transport charges would be levied on a per unit basis, regardless of the value of the crop. As such, economic incentives will exist for farmers to shift crop production into a mix that includes a relatively greater proportion of higher value, low volume commodities.

These lower priced commodities would include feedgrains; therefore, the demand for feedgrain by such users as livestock producers can be expected to increase. The extent to which livestock production expands depends on the change in transport costs and its effect on feedgrain prices.

Although a general consensus exists on the direction of major aggregate production shifts, the magnitude of such changes is unclear. As well, provinces and regions within provinces will respond differently, and the more intricate and "micro" level relationships are not well documented.

The production shift analysis included in this report does not consider the effects of alternative Crow benefit payment mechanisms. If resource neutral, the payment will not influence farm production decisions. Whether this is actually realized depends on the alternative characteristics selected for the Crow benefit payment mechanism. However, the payment mechanism is a separate issue, not to be confused with production shifts occurring from higher freight rates. As such, these two matters will be discussed independently, with the payment alternatives and implications having being dealt with more fully in the first section of this discussion paper.

7.0 TERMS OF REFERENCE

This report identifies the extent of the adjustment in the production patterns in Manitoba resulting from increased freight costs if the pay the producer method of payment was introduced. These forecasts of changes in the type and volume of commodities produced reflect not only the change in marginal cost of transportation with changing freight costs, but also the constraints that the geography of Manitoba applies to agriculture in terms of soil type, rainfall in each region, number of heat units, etc.

These changes in production correlate with a change in the value of each of the commodities, reflecting both the changes in freight costs for export and the geographic factors noted above.

8.0 METHODOLOGY

The methodology used in this study has three basic components: (i) a review of related studies; (ii) consultation with industry representatives. Information and knowledge garnered during this process is then assimilated into the final analysis by the project team; and (iii) an analysis using an econometric model. The role of the model is to quantify some of the more complex interactions, but not to supersede the findings suggested by industry representatives and economic rationale.

9.0 PRODUCTION SHIFT ANALYSIS BACKGROUND

This section provides the background information on the analysis of the production shifts that can be expected to occur at the primary level, including livestock production.

The effect of each alternative is to increase transportation costs paid by grain producers, creating an incentive for changes in planned production. The extent to which production shifts may occur depends on the relationship between the farmgate price of a commodity and the production decision for that commodity, as well as the prices and production decisions involving alternative commodities. Because various areas of the province favour the production of different agricultural commodities, production shifts can be expected to differ between regions.

For each of the scenarios, the analysis assumes that the Crow benefit is paid to the producer under an unspecified payment mechanism that is "resource neutral"; that is, payment of the Crow benefit to farmers is assumed not to influence production decisions or to distort the allocation of resources. Instead, such production decisions are assumed to be based on market prices and not on any effect that the compensation might have. If the Crow benefit payment mechanism selected is not resource neutral, then the impacts identified in this report will be reduced, to some extent.

Whether resource neutrality is actually realized depends upon what characteristics are selected for the pay the producer mechanism. For example, the neutrality of alternative methods of payment depends on whether the compensation is based on historical or future information as well as on whether such bases as the amount of exported grains or arable acres are used. However, resource neutrality is an issue separate from the effects of increased transportation costs on production decisions.

9.1 Grains

The first major production shift is expected to occur in the short run and accompany the simultaneous fall in farmgate prices for all of the principal grains. This would create an economic incentive for farmers to minimize the negative impact of increased transportation charges by shifting into the production of those crops having the greatest profits under the new situation.

The indirect prices of alternative non-complementary crops reflect "opportunity costs." The opportunity cost of producing one commodity is the income foregone by not producing another. If foregone income exceeds the revenues from a particular crop, an incentive would then exist to employ the same resources in the production of an alternative crop. Thus, lower barley prices would have a negative effect on the amount produced, but lower prices in alternative crops, such as in wheat and canola, could offset the direct price effect. Conversely, the production of some crops essentially behave as complements, having positive cross-price effects.

The supply responsiveness of a change in price for a particular commodity depends primarily on the availability of alternatives. For example, alternative production opportunities may be limited by land that is suitable only for the production of a particular crop or commodities that require specialized equipment or expertise. The greater the availability of production alternatives, the more sensitive will be the supply response to price changes.

Although a general consensus exists with respect to the major shifts in production, one major point of departure is the relationship between changes in transportation costs and the amount by which farmgate prices are expected to decline. Most previous studies have suggested or stated that such prices will decline in an amount equal to the transportation costs; however, consultations

with industry representatives and a small number of earlier studies[8] have suggested that this relationship is not necessarily so.

Specialization in grains and livestock sectors that occurred throughout the seventies and eighties is not likely to be reversed because of a change in the method of payment. For example, an increase in livestock production would most likely come from existing livestock operations expanding, rather than grain farms diversifying.

Production shifts are expected to vary considerably not only between regions, but also within regions, especially in the case of rail line rationalization. However, when the analysis begins to consider rail rationalization, the production shifts focus on responses to branch line closures, rather than on regions defined by agronomic differences.

It is expected that there would be slightly more board grains exported from eastern elevator points, such as Beausejour, than from distant northwest points, such as Swan River. For these two points, farmers would experience the following rate increases for grain moving to Thunder Bay:

Location	WGTA Total Rate ($/Tonne)	Increase ($/Tonne)
Beausejour	19.81	13.92
Swan River	26.31	18.49

There is a $4.57 per tonne greater increase in freight to export grain from Swan River to Thunder Bay compared to Beausejour to Thunder Bay. Still,

[8]Furtan, W.H., J.G. Nagy and G.G. Storey, "The Impact on the Canadian Rapeseed Industry from Changes In Transport and Tariff Rates", American Journal of Agricultural Economics, (May 1979) 238-248; and Anderson, M.S. and W.H.C. Hendricks, A Review of the Crow Rate: Implications for Alberta Agriculture, Report for Alberta Agriculture, (1978)

this difference would not likely have a significant impact on production. Because WGTA rates are distance related, the impact is not as great for branch lines as it would be if transport rates reflected real costs.

9.2 Livestock

A major shift is expected to occur as a result of the lower priced feedgrains in Manitoba. As feedgrain prices fall, livestock production, which use these commodities as an input, can be expected to expand. Compared to the inter-crop production shifts, this change in output would take longer to occur because of biological constraints of the animals. The extent to which local livestock production responds to lower priced feedgrains depends on the price decrease, market constraints, and supply limitations.

The livestock response has been estimated based on findings from previous studies and discussions with industry representatives.[9] Many such individuals expect that, in the long run of six to ten years, hog and cattle production could increase over twice that of current levels; others expect a relatively modest increase, more in the order of 20 percent.

Although there is some discrepancy between what would be the expected livestock expansion, there is general agreement on what would cause such an increase in production. First, a change in the method of payment would be expected to prompt the Saskatchewan and Alberta governments to dismantle those programs currently subsidizing feedgrain users in these provinces, as well as the recently announced program in Manitoba. Second, lower feedgrain prices would be expected to induce livestock production in the long run.

[9]See Appendix 3.0 for detailed calculations.

In recent years, Manitoba feeder livestock have been exported to Saskatchewan and Alberta to be finished. Presently, approximately one third of the calves produced in Manitoba are moving to these provinces to be finished. The amount of feeder cattle being exported from Manitoba to these provinces has increased from approximately 50 thousand head in 1986 to 113 thousand head in 1988.

This trend has occurred largely because government programs in Saskatchewan and Alberta have created economic incentives for Manitoba producers to export feeders to be finished in these provinces. The "Crow Benefit Offset Program" provides Alberta's livestock producers with a ten dollar reduction on each tonne of grain fed to cattle and other commercially fed livestock. Saskatchewan's "Feedgrain Adjustment Program" pays thirteen dollars per tonne of feedgrain, based on a standard consumption factor for cattle, hogs, and other specified animals finished in that province. Prior to the implementation of this new program, livestock producers in Saskatchewan had received a tax credit having an effect similar to that of the subsidized feedgrain program.

The program in Alberta was designed specifically to offset the disadvantage to livestock producers created by the partially subsidized WGTA rates; Saskatchewan's was created to remain competitive with Alberta. Manitoba recently announced a program of its own to stem the flow of feeder cattle to these provinces. Therefore, it is expected that political and fiscal pressures will cause the governments of these provinces to eliminate these programs if the method of payment were to change to a pay the producer approach. A "level playing field" should be restored if not by impetus provided by a change in the method of payment, then by the effects of these programs. In either case, historical feeding patterns are a more realistic basis to analyze the effect of lower feedgrain prices on livestock production.

If a level playing field was to occur, it is expected that the majority of feeder cattle produced in Manitoba would be finished in the province.

By removing these incentives to export feeder livestock out of province and given the infrastructure which still exists to enable these animals to be finished in Manitoba, it is reasonable to assume all feeders now being exported to Alberta and Saskatchewan would finished in Manitoba. Proceeding under this assumption, finished cattle production in Manitoba would be expected to increase by 113 thousand head, assuming exports to Ontario and elsewhere remain the same. Therefore, the total cattle stock produced and fed to slaughter in Manitoba would be 234 thousand head.

Industry representatives do not believe that the number of hogs produced and finished in Manitoba is affected by such programs. Hogs are not marketed inter-provincially to the same extent as cattle. Expansion in cattle production would depend on growth in the cow-calf herd. This, in turn, depends on improved margins being bid into feeder calf prices. Therefore, both feedlot and cow-calf operations should benefit from lower feedgrain prices, but the determination of the extent that each does so is beyond the scope of this study.

9.3 Markets for Livestock

Livestock production is also expected to increase because of lower feed grain costs. The responsiveness of such production depends to a great extent on whether increased output in western Canada would be absorbed in the North American market without a subsequent decrease in price. Livestock prices are determined in the North American market, and if increased output caused prices to fall, returns to western Canadian producers would be diminished, thereby dampening supply.

Currently, western Canadian livestock production represents only 0.93 percent of North American cattle production and only 2.2 percent of North American hog production. This would suggest that any increased production from Manitoba, or the rest of western Canada, would largely be absorbed in the North American market and would have only a negligible effect on prices.

One constraint that may limit hog production is U.S. countervailing duties. These duties are aimed at offsetting government contributions perceived to encourage Canadian production above levels that would otherwise occur. However increases in production induced by lower feedgrain prices, not government programs, should not be subject to countervailing duties. Whether U.S. administrators view this increased production as such is debatable, but this is more a political issue than an economic one.

9.4 Livestock Elasticity (Supply Shift)

Given that North American livestock prices are relatively unresponsive to increased production in the western Canada, an "elastic" supply of livestock with respect to changes in feedgrain prices is most probable.[10] In a study of the livestock response to lower feedgrain prices, Downey used the same arguments in his analysis of the Saskatchewan livestock production response and for choosing long run elasticities of 3.0 and 3.5 for cattle and hogs, respectively[11]. Downey states his rationale for these elasticities as follows:

[10] The elasticity of livestock supply with respect to feedgrain prices is defined as the percentage change in livestock production in response to a one percent change in feedgrain prices. An "elastic" supply means that production would be quite responsive to changes in feedgrain prices, while an "inelastic" supply would be relatively unresponsive.

[11] Source: Downey, Richard D.,
The Impacts of a Change in the Crowsnest Pass Agreement Rates Upon the Saskatchewan Economy: An Input-Output Analysis M.Sc. Thesis, University of Saskatchewan (1986)

"Most previous livestock supply elasticities were derived from feedgrain price fluctuations that occurred throughout the North American market. The increase in local transport rates represents a structurally different type of cost change. This type of change in feedgrain prices will create a smaller local livestock response than one from a local increase in transport costs. When feedgrain prices decline throughout North America livestock production will expand, thereby decreasing livestock prices and returns throughout the market... The change in local prices of feedgrains will provide savings in feed costs to livestock producers in this area only, as opposed to national and international savings in feedgrain prices. The small local livestock is relatively open and can expand production such that it will not have a significant impact on Canadian or North American prices.

The transport rate induced feedgrain price change is also different from most previous price changes in that it is not as volatile or uncertain as other price changes... This type of price change is in contrast with many feedgrain price fluctuations created by swings in world supply and demand conditions or those produced by temporary transportation constraints. Thus, the local elasticities of approximately one or less with respect to feed costs, are likely highly underestimated."[12]

The stability of feedgrain supplies and prices would also influence livestock production. It has been argued that a change in the method of payment would be "once-and-for-all," allowing producers to incorporate the effects into their production decisions. This contrasts with price fluctuations that are market driven or caused by constraints in the transport system temporarily increasing local supply.

12 Downey The Impacts of a Change in the Crowsnest Pass Agreement Rates upon the Saskatchewan Economy, 98-99.

Because their supplies are controlled by supply managed marketing boards, industries such as the dairy and poultry sectors are expected to experience little, if any, growth as a result of lower feedgrain grain prices.

9.5 Special Crops

The production of specialty crops would likely increase as a result of the producers shifting into crops that have a higher value per tonne. However, empirical evidence from prior studies suggests that this shift would likely be small. The interviews with industry representatives tend to support these findings. Reasons commonly cited are that producers may lack the expertise or equipment, and, because only small quantities may oversupply the markets, farmers may be adverse to the economic risks inherent in producing such crops.

9.6 Econometric Model

To test the above findings and provide some empirical content for both the province and its regions, an econometric model was developed.

The econometric model was derived from behaviourial responses of farm production in relationship to market price changes, using historical price and production data from 1978-87.[13] The model uses 1987 as the base year and then estimates what production would have been during that year had producers received different grain prices; essentially, the model analyzes the impact of grain price changes on the production of grain. The price change has been calculated using data from the average of the government's share of WGTA rates from several representative points in each of the five regions.

[13] See Appendix 2.0 for a technical description of the model.

In responding to price signals, farmers are expected to incorporate other economic as well as agronomic factors in their production decisions. The following are some of the major factors expected to influence production:

(i) Economic:

- the profitability of crop or livestock enterprise
- the price relative to market and production risks
- the opportunity costs of crop and livestock alternatives

(ii) Agronomic:

- management capabilities
- preferences for producing a particular enterprise
- crop rotation

These factors are also taken into account by and reflected in the technical coefficients of the model.

The impact at the provincial level is the weighted sum of the regional impacts. That is, the impact at the provincial level has been derived by weighting the percentage changes at the regional level by the regions share of the total production and then summing these results for each region.

Production shifts in summerfallow were difficult to estimate because insufficient variation in the data did not enable these equations to be estimated. It is not surprising that summerfallow acreage is relatively unresponsive to crop price changes because previous research has shown that crop prices are of secondary

importance relative to soil moisture and agronomic practises.[14] Though equations for summerfallow were derived for some regions and have been included in the regional analysis, their limitations should be appreciated.

The forage response may be lower than expected, given the expansion in livestock production. However, the livestock expansion is viewed in the long run, while the forage response is a short run "impact." There is no dynamic relationship between these functions, but it is expected that as livestock production expands, so would that of forage.

It is important to realize the limitations of the model and correctly interpret the results thereof. More important than the absolute values of the production shifts are the relative shifts between different crops and within different regions. As well, the model also provides valuable information on the direction of the production shifts for the major grain crops.

The net changes in production for each region may be greater or less than the base level scenario; that is, the columns do not necessarily have to "sum to zero." An interpretation of decreased total production, for instance, is that marginal land might have been put out of production or land may have been put into the production of crops not included in the analysis.

[14] Downey, The Impacts of a Change in the Crowsnest Pass Agreement Rates upon the Saskatchewan Economy, 92.

10.0 PRODUCTION SHIFT ANALYSIS - MARKET ABSORPTION

Shifts in production depend on the relationship between increased transportation costs and the farmgate price received by farmers. Most other studies have assumed or suggested that this change in freight costs would be fully reflected as a price decrease; in other words, that the increased transportation cost has an equal and opposite effect on farmgate prices.

However, industry representatives, as well as a small number of other studies, claim that this relationship is not so direct in reality.

10.1 The Market Absorption Assumption

For each of the major grain crops, this subsection revisits the question of the extent to which farmgate prices would decline, given an increase in transport costs. This analysis has incorporated industry views and insights from other studies to derive an estimate of the portion of transport costs that the market might absorb.

10.1.1 Wheat Price Changes

The street price for wheat is influenced by the following markets and factors:

- World wheat markets
- Market share
- Domestic demand

The wheat farmgate price is expected to decline by increases in transportation costs and any response by the market. Canada captures an average of only approximately 18 percent of the export market for wheat. Therefore, because Canadian wheat exports are not great enough to

significantly influence world prices, the export market will not likely absorb any additional freight costs.

The domestic market would also probably not provide much price support. Domestic requirements, excluding seed, account for less than 20 percent of total production.

In considering the responses of these markets, any increase in transportation costs is expected to have an equal and opposite effect on the farmgate price of wheat.

10.1.2 Canola Price Change

The street price for canola in Manitoba is influenced by a number of markets, including:

- Soybean market
- Exports to Japan
- Western Canadian crushers
- Eastern Canadian crushers
- United States crushers
- Exports to the rest of the world other than Japan and the United States

Demand from the eastern Canadian and U.S. crushers as well as CSP Altona and Harrowby exceeds Manitoba's supply of canola. Therefore, Manitoba canola prices could, depending upon the dynamics of the various markets captured by each crusher or exporter, move to a premium over those received in Saskatchewan locations, in the amount of freight costs between Saskatchewan and Manitoba. Whether this premium is actually received depends not only on the interaction between regions and a new economic

equilibrium being reached, but also pricing practices of companies and relative quality of product.

On the other hand, it is also quite conceivable that the market could price Manitoba canola on an export basis, ex Vancouver; in other words, Manitoba canola would be priced at a discount to Saskatchewan canola, by the cost of freight.

Therefore, the impact of a change in freight rates on the price of canola will depend on which situation exists and to what degree; that is, Manitoba canola could potentially be priced at any level in between a full discount and a full premium.

If canola prices were to initially decrease $20-35/tonne because of freight rate increases, domestic crushers, who sell their product for domestic consumption would experience large increases in their crushing margins and profitability. An expansion of volumes crushed could be sufficient to increase demand and bid up prices, to some extent.

Another influence on canola prices would occur because of potential increases in the price the Japanese pay for exported canola.

The study by Furtan, Nagy, and Storey, referred to in Footnote 1, found that if Canadian canola exports faced higher rail freight charges, the Japanese preference for our canola was strong enough to pay more to continue to receive our supply, rather than have volumes reduced to the full extent. Thus, it may well be that if exports were to reduce due to lower production (caused by lower prices to producers) and increased domestic crushing (due to increased crush margins from lower cost canola) that part of the freight rate increase would be paid by the Japanese consumer.

In summary, the combined effects of all these influences is estimated to absorb 40 percent of the freight rate increase after all impacts have exerted their interactive influences.

10.1.3 Barley Price Changes

Barley prices are affected by the interaction of the following markets:

- Exports markets and competitors (Russia, China, Saudi Arabia, U.S., etc.)
- Corn markets
- Eastern livestock producers
- Western livestock producers
- Manitoba livestock market

With a change in the method of payment that increases transportation costs paid by farmers, there would likely be less barley supplied to the export market. Therefore, if the supply of exportable Canadian barley is reduced, the price of barley would likely increase by some amount on the export market. The amount of the transportation costs that would be absorbed by the export market depend on a number of market factors, such as competitive barley supplies, the amount of reduction of exportable barley, etc.

Canadian barley exports have a much greater influence on world prices than do those of wheat. For example, the Canadian Wheat Board captures up to 40 percent of the world barley trade, enough to have an influence over prices. As well, because barley is perceived as a "white feed grain" and priced at a premium to corn, the export market would likely be willing absorb some, albeit a small amount, of the increased transportation costs.

The farmgate price of barley is also affected by domestic feedgrain uses. Presently, Manitoba produces approximately two million tonnes of barley. Approximately 50 percent of this production is exported out of Manitoba, with the remainder used in livestock production.

The major barley users are hog, cattle, dairy, and poultry producers. Because lower feed grain prices would reduce production costs, livestock enterprises can be expected to expand.

In the longer run, after the livestock sector has expanded, farmgate prices for barley may be bid up somewhat because of increased demand. However, the amount by which prices would increase is constrained by surpluses of barley in other regions, such as Saskatchewan, and the cost of inter-regional or inter-provincial transportation.

Any change in the amount of feeder cattle being exported out of Manitoba from the present would also influence barley prices. As discussed previously the production of livestock is expected to expand as a result of the feedgrain assistance programs in Alberta and Saskatchewan being dismantled as well as from the effects of lower feedgrain prices.

In summary, the amount of barley that would be produced under a change in the method of payment would depend on:

- the price decrease of barley
- the price decrease of alternate crops, and
- the amount of livestock increase.

The increase in freight rates for a farmer in Waskada would be $17.44 per tonne to ship his grain to Thunder Bay. The Anderson and Hendricks

study,[15] suggests that only 50 percent of this cost would be paid by the farmer and the remainder would be absorbed by the market. For Waskada, this would result in an effective increase of $8.72 per tonne in freight cost or reduction in grain price.

It is estimated that all of these influences would absorb 50 percent of the freight rate increase after all impacts have been exerted.

10.1.4 Flaxseed Price Change

The price that Manitoba farmers receive for flaxseed is influenced by the following:

- Export markets (West Germany, Netherlands, Japan, United States, etc.)
- Competition with Argentina
- Domestic use

The world market for flaxseed is small relative to wheat, barley and canola. As such, flaxseed prices are subject to greater fluctuations than are the other major crops. Canada, the largest supplier of flaxseed, has 35 percent of the market share of the world flaxseed market, while Argentina has 20 percent.

The price of flaxseed is set on a world market and follows the soy oil market closely. Therefore, even if the amount of flaxseed that Canada supplies were to decline as a result of freight rate increases, the price of flaxseed would probably not increase significantly.

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[15] Anderson, M.S. and W.H.C. Hendricks, A Review of the Crow Rate: Implications for Alberta Agriculture, (1978)

Flaxseed prices would be supported somewhat by the demands of crushing plants at Riverside, North Dakota (Cargill), and Redwing, Minnesota (ADM). Farmers would have an economic incentive to ship grain to these closer markets so as to avoid the higher transportation costs of shipping to Thunder Bay or Vancouver. In recent years, flaxseed exports to U.S. crushing plants have increased to approximately 17 percent of the total.

From this analysis, it is estimated that 10 percent of the increase in freight rates would be absorbed by the market for flaxseed. The remaining 90 percent would be borne by the farmer.

10.1.5 Summary of Farmgate Price Changes

In summary, the price farmers receive would be affected not only by the increase in freight costs, but also by the amount of the increase that the market is able to absorb. The preceding analysis identified a number of market factors that will influence the price received for major grains and suggested amounts which the market might absorb. These amounts are only estimates arrived at in consultation with industry representatives, but this marks an improvement over other studies that had used a more "naive" approach; however, further research is required to quantify this relationship even more precisely.

The following summarizes the estimated amount of the transport costs that the market might absorb for each major crop:

Crop	Cost absorbed by market(%)
Wheat	0
Canola	40
Barley	50
Flaxseed	10

The market place would not absorb all cost increases in the same proportion. As prices increase, lesser amounts of the increase would be absorbed by the market place due to substitution.

10.2 Production Shift Analysis: The Market Absorption Assumption

In this subsection, several scenarios are examined. They include:

- **WGTA Total Rates:** change to pay the producer; no change to Canadian Wheat Board pooling; and full WGTA rates charged to the producer, i.e., the producer would pay both the current share of such rates as well as what is now being paid by the government. This scenario assumes no rationalization in the rail system.

- **Western Grain Transportation Act eliminated:** change to pay the producer; Canadian Wheat Board pooling unchanged (Thunder Bay/Vancouver); Western Grain Transportation Act eliminated; and the National Transportation Act revised so that it applies to crops and their products. This scenario would have commercial rates apply to statutory crops.

Each of the policy scenarios has a similar effect on production decisions: crop production shifts are induced by some increase in transportation costs. What differs between the scenarios, however, is the amount by which such costs rise.

10.2.1 Market Absorption: WGTA Total Rate Scenario

Under the WGTA Total Rate scenario, producers would be faced with paying the total amount - including that now being paid by the federal government - of the WGTA rates. If this were to occur, the new farmgate prices would be expected to be incorporated into farmers' crop production decisions, thereby inducing shifts in crop production.

Previous studies have suggested that western Canadian farmers would reduce the amount of acreage devoted to grain production in response to the simultaneous drop in crop prices, but that this supply response would likely be small. The price changes are probably not so great that net returns on fixed assets devoted to grain production would be driven to zero.

Furthermore, much of the land used for grain production has limited potential to grow anything else. Consequently, this land would not likely be left idle: it is expected to either be used to continue to grow grain, though less intensely, or, for more marginal land, be transferred to forage production and to support of beef cow-calf operations.

The expected average price changes for the province are summarized in Table 10.1. Under the market absorption assumption, prices fall by between 5.5 and 10.8 percent. Therefore, the amount of freight rate that is absorbed by the market place will result in overall production shifts that are not as great as under the more conventional "naive" assumption of price change equalling the freight rate change.

Table 10.1: Price Impact with Market Absorption - WGTA Total Rates[1]

	Wheat	Canola	Barley	Flaxseed
Rate change ($/tonne)	-16.53	-32.19	-16.53	-16.53
Market absorption (%)	0	40	50	10
Total price change ($/tonne)	-16.53	-19.31	-8.26	-14.88
Average price ($/tonne)[2]	153.60	281.30	100.25	270.70
% Change in price	-10.8	-6.9	-8.2	-5.5

[1] Canola is priced FOB Vancouver
[2] Manitoba Agriculture Yearbook, Farm Value Price per tonne, ten year average, 1978-87.

The production of barley and canola appears to be a relatively more attractive alternative under the "market absorption" assumption as compared to the "naive" assumption.

Wheat production is expected to be a relatively less attractive alternative under the market absorption assumption. This is because wheat prices are expected to decline by the full amount of the transportation costs, causing them to fall by a greater percentage than for other crops which benefit from the market absorption effect.

Under the WGTA Total Rate scenario, livestock production is expected to be somewhat less under this assumption than under the "naive" assumption. Given an 8.2 percent decline in barley prices and using the same rationale for calculating the livestock response as used in Appendix 3.0, cattle production would expand by 58 thousand head and hogs by 522 thousand head.

In "shocking" 1987 production under the WGTA Total Rate scenario and the "market absorption assumption" the model reflects these general trends. The aggregate results are summarized in Table 10.2. In addition, though not generated by the model, the long run expansion in cattle and hog production has been included in this table, showing an increase in cattle and hog production of 58 and 525 thousand head respectively.

Table 10.2: Provincial Shift - WGTA Total Rate with Market Absorption

Commodity	Change in production
Wheat	- 1.6%
Barley	+ 5.5%
Canola	+ 2.9%
Oats	+ 5.6%
Flax	+ 3.8%
Forage	+ 2.1%
Cattle	+ 24%
Hogs	+ 28%

A regional analysis has also been done under this assumption, and the results are contained in Table 10.3.

Table 10.3: Regional Shifts with Market Absorption - WGTA Total Rates[1]

Crop	Southwest Region 1	S. Central Region 2	Southeast Region 3	Parkland Region 4	Interlake Region 5
Wheat	+<1%	- 2%	+10%	- 4%	-13%
Barley	-<1%	+37%	-18%	-14%	- 2%
Canola	+12%	+ 6%	+ 4%	- 3%	-13%
Oats	+ 5%	+ 8%	+15%	- 1%	+ 8%
Flax	+ 2%	+ 6%	-	+ 6%	-<1%
Forage	+ 4%	+ 2%	+ 3%	+<1%	+ 2%
SFallow	-	-	-11%	-	-17%

[1] The production shift analysis assumes that the yields are constant. As such, percentages can be interpreted either as changes in production or in acreage. A dash (-) means that no supply function equation could be derived for that particular commodity.

Few clear trends emerge from the regional analysis, but there is a general shift into canola production and barley production under the market absorption assumption. As well, there is a general shift away from wheat production. However, this may not be the case for a particular region because the shifts depend on the cropping alternatives inherent in each region and this varies considerably by region.

10.2.2 Market Absorption: WGTA Eliminated

Under this scenario the WGTA is eliminated, implying that freight rates would be determined competitively by the rail and trucking industries. The same market dynamics would influence grain production in Manitoba under a commercial rate scenario as under the WGTA Total Rate scenario: farmers would respond to lower price signals, caused by increased transportation charges.

The difference between this and the first scenario, however, is that the shifts in production depend mainly on whether the producer is located near a low cost main line or a high cost branch line. This essentially precludes an analysis within the same framework as the previous scenario because to do so would involve a detailed analysis of expected commercial rates for each line in Manitoba. Even if this were done, commercial trucking rates also have to be determined because the ultimate rate paid by farmers would be the lower of the two. Such an analysis is beyond the scope of the present study.

Under a commercial rate system, it is expected a number of branch lines and related elevator points in Manitoba would become uneconomic. If rail freight rates increased to reflect real operating costs, farmers located on many branch lines would find trucking to be a more viable alternative.

It follows that, if the truck and rail industries were to compete on price and service, farmers would not deliver to rail lines with freight rates in excess of commercial trucking rates. With this lack of use, a number of uneconomical lines would be abandoned.

Although branch line abandonment is expected to accelerate under this scenario, total farm grain incomes are generally expected to be higher, and production shifts would be less, than under the WGTA Total Rate scenario. WGTA rates are an average rate of the total cost of the western Canadian grain rail system, reflecting only the distance to the port of export, not real operating costs. As such, main line commercial rates would be lower than the corresponding WGTA total rates, while many branch line rates would be higher.

However, freight rates on branch lines would only increase to the extent that trucking is not a viable alternative. Where it is, competitive market forces would intervene, tempering the amount of the freight rate increase.

Therefore, the relevant grain price decrease would probably be less than would occur under the previous scenario with the WGTA Total Rates. Overall, on the provincial level farmgate grain prices could be slightly higher than in the WGTA Total Rates scenario, and, accordingly, production shifts would be slightly less.

The view held by many of those close to this issue is that, if the payment were made to the producer, it would be imminent that the Western Grain Transportation Act be revised or eliminated. If not, potential exists for major transport anomalies to occur because railway companies would then be at a competitive disadvantage relative to the trucking industry on a number of lines.

Assuming that the existing railway lines remain operational, the full WGTA freight rates for Oakville and Swan River would be $21.31 and $26.31 per tonne respectively for grain shipped to Thunder Bay. However, this $5.00 per tonne difference in rates does not reflect the real difference in the cost of transporting grain from these two points.

While preliminary and subject to revision in the later study focusing on transportation and handling, the potential commercial railway rates for moving grain to Thunder Bay have been estimated at $10.50 to $15.00 per tonne for Oakville and $23.00 to $30.00 per tonne for Swan River. Under WGTA rail rates, trucking companies could compete with railway companies for grain sourced from Oakville, but not that from Swan River. Under the restrictions of the WGTA rates the railways would not be competitive with trucking on routes such as Oakville, even though their actual costs are much lower than the administered WGTA rates.

Therefore, under WGTA rates, instead of paying the railways $21.31 to transport grain from Oakville to Thunder Bay, a farmer would likely opt for a lower rate to truck the grain - even though the trucking rate might be higher than the railways real cost.

The result of maintaining the WGTA rate structure and paying the producer would be that grain from eastern and central areas of Manitoba could be transported at a lower charge to the farmer by truck. This situation is untenable, thus supporting the view that farmers, railway companies, and others would press for changes from the existing WGTA rate structure to a revised system, potentially with a commercial rate system.

10.2.2.1 WGTA Eliminated: Regional Production Shifts

Although the aggregate provincial production shifts are expected to be somewhat less under this scenario than under the WGTA Total Rate scenario, it is believed that greater variation in price changes and production would occur within each region. Production shifts are affected by not only agronomic differences, but also the infrastructure within each region. While agronomic characteristics are relatively uniform within any particular region, the infrastructure is not. Therefore, generalizations within regions are more difficult to make.

Although an analysis for this scenario is more difficult to make on a regional basis, the location and characteristics of the railway system obviously favours some regions over others. For example, region 5 has only branch lines while region 3 has only main lines. Therefore, it is apparent that the former region could be faced with higher transportation costs, while the latter could receive benefits associated with lower main line costs. Also, these regions may develop differing views as to what rate system would be "best."

For illustrative purposes only, the commercial rates estimated to be the possible, but at the lower end of the range of estimates, are incorporated into the economic model. It is assumed that the commercial rates for the locations contained in Table 10.4 represent the norm for that of the entire region.

Table 10.4: Commercial Rates by Location

		Commercial Rates ($/Tonne)	
Location	Region	Thunder Bay	Vancouver
Waskada	1	20.04	41.29
Oakville	2,3[1]	10.45	35.05
Swan River	4	22.85	38.05
Arborg	5	19.36	47.21

[1] Oakville, located in region 2, is assumed to be representative of region 3 as well. This is reasonable because Oakville is located on a main line, and there are only main lines in region 3.

This assumption of these rates representing the region is, of course, not realistic - there is too much variation within each of the regions for any single point to be representative. Yet, this exercise illustrates how these different regions would respond if this were indeed the case.

Once commercial rates are introduced into the analysis, regional analyses are difficult to make. That is, production shifts would be affected by not only agronomic differences, but also the infrastructure within each region. Therefore, generalizations on a regional basis are more difficult to make.

Again, for the province as a whole, the production shifts under this scenario are expected to be somewhat less than under the WGTA Total Rate scenario. That is, production shifts similar to those in Table 10.2, but even more modest, are expected in this scenario.

10.3 Summary of Production Shift Analysis

The following summarizes the key findings of this study:

- The conventional view assumes that farmgate prices would fall by an amount equal to transportation costs. This study challenged and modified this assumption, recognizing that a portion of the increased transportation charges would be absorbed by the market. This "market absorption" assumption was developed in consultation with industry representatives.

- For grain crops, at the provincial level when the "market absorption" assumption was incorporated into the analysis, the production shifts were modest.

- It is expected that, if a change in the method of payment were to occur, pressures from some farm groups and the railways may cause the Western Grain Transportation Act to be revised or eliminated. As such, a commercial type of rate scenario would seem to be the most likely in the long run.

- Although there is a general tendency for production to shift into higher valued low volume crops, this depends greatly on agronomic characteristics for any particular region and the market to which the crops are shipped.

- The greater the available alternatives in any particular region, the more sensitive will be production shifts to the simultaneous fall in farmgate prices.

- Under the commercial rate scenario, there would the greatest variation within the regions. That is, while agronomic differences are relatively uniform within any region, the railway infrastructure costs differ considerably for points within regions.

- There are two major factors that are expected to cause livestock production to expand if the payment were made to the producer. First, there would be pressure for the feedgrain assistance programs in the prairie provinces to be dismantled, resulting in a more "level playing field." Second, lower feedgrain costs would induce greater hog and cattle production. The extent to which this second factor has an effect on livestock production depends on the scenario and the assumption made regarding market absorption.

- Technical changes in the nature of the market, such as increased domestic processing and decreased exports of raw grain, would tend to shift the analysis. Indeed, given such adjustments, little or no production shifts may actually occur in the long run.

- In Manitoba, if there was a change in the CWB pooling system, the farmgate price of the CWB grains, wheat and barley, would fall relatively more than those of the other grains. As such, the production of CWB grains would be negatively impacted.

  On the other hand, livestock production is expected to expand more under this scenario than any other. As well, because Manitoba's livestock producers would face lower feedgrain prices than any other prairie province, the province could become a major livestock production region.

SECTION III

EPILOGUE

11.0 EPILOGUE

This discussion paper has covered alternative payment mechanisms for paying the Crow benefit to producers and has covered the analysis of production shifts in Manitoba.

The next discussion paper will address the implications of a possible change in the method of payment on the following sectors:

- transportation and handling,
- processing, and
- rural communities.

APPENDICES

Appendix 1.0 Description of the Regions

The regions are an aggregation of a number of crop districts that have similar agronomic and production characteristics. The regions are as follows:

Region	Crop District[1]	Geographic Area
1	1, 2	South West Manitoba
2	7, 8	South Central Manitoba
3	9	South East Manitoba
4	3, 4, 5, 6	Parkland
5	11, 12	Interlake Area

[1] Crop District 10 is not considered in this analysis.

The Crop Districts have been grouped into their respective regions based on the following characteristics:

Region 1: Southwest Manitoba

- limited precipitation
- coarse grains forming the greatest proportion of crop rotation
- greater percentage of summerfallow
- greatest percentage of cattle production
- greatest percentage of pasture acreage and hay production
- limited cropping alternatives

Region 2: South Central Manitoba

- longest growing season
- greatest cropping alternatives
- number of secondary processing facilities
- greatest percentage of hog production
- greatest percentage of oilseed and special crop production

Region 3: Southeast Manitoba

- no branch lines, only mainlines
- extremely diversified - crops and livestock
- long growing season
- good precipitation

Region 4: Parkland

- shortest growing season
- large proportion of hay production and pasture acreage
- greatest proportion of canola as part of total crop rotation

Region 5: Interlake Area

- no mainlines only branch lines
- variety of soil types
- very little crop production as a percentage of total Manitoba grain production

Appendix 2.0 Technical Description of the Economic Model

For this project, all supply functions (equations) are derived by ordinary least squares (OLS) procedures. These supply functions are estimated using a "positive," rather than a "normative" basis. The latter approach, used in such techniques as linear programming, determines what the optimal solution would have been given the historical data.

In positive estimation, the equations are derived by fitting a linear regression to the historical data with the least squared error. The use of this approach enables different policy scenarios to be evaluated with respect to changes in production levels. The past technical relationships and all other policies except the one under evaluation are assumed by this approach to remain stable and unchanged. Such an approach is best used to predict over the same historical period as the equation was derived over.

Production data and commodity prices were collected from the Manitoba Department of Agriculture for the period 1977 to 1987. These data were set up in data files for each Region on the aggregated basis. Average yields were used for the regions in question.

Econometric supply functions were then developed for each of the following commodities: wheat, barley, canola, oats, flax, forage, beef cows, beef heifers, and breeding hogs. Where feasible a function was also derived for summerfallow acres.

In some regions, it was not econometrical possible to develop proper functions for some of the commodities. This is largely due to a lack of variance in the data for these commodities and Regions where current production levels are most closely associated with last years production.

The equations developed were first utilized to predict the actual values of the data for the dependent variable over the historical time period. The equations are thus validated by determining their accuracy and reliability. Following this validation process, the equations are then "shocked" by the various policy change scenarios under consideration by deriving new net initial or farm gate grains and oilseeds prices for the grains and oilseed commodities under consideration.

These new grains and oilseed prices are derived by deducting the appropriate new freight charges from either the Canadian Wheat Board initial prices or the Winnipeg Commodity Exchange future prices for the commodity. For the scenarios under consideration, the new farm gate prices are all reduced from the current levels. The equations then predict what production would have occurred given these new lower prices for the grains and oilseed commodities.

The equations not only consider the production responses of producers for a specific commodity to the prices of the commodity itself but also to prices of competitive commodities. Thus, the "own price" response is determined as well as the cross price responses.

The new lower prices for barley and oats would also result in lower prices for feed barley and oats, and thus in lower feed costs for livestock producers. The livestock supply functions developed utilize the prices for feed grains as independent variables in the supply functions. Thus, an estimation of the supply elasticities for the livestock commodities to the price of feed grains is derived.

A more detailed analysis using a dynamic simulation approach would be able to analyze the ripple effect through the grains, oilseeds and livestock sectors of the primary agricultural economy of changes in the freight rate structure for grains and oilseeds.

The major output of the analysis conducted is a "snapshot" or an evaluation at a single point in time of the freight rate and CWB pooling changes being evaluated. As such, relative comparisons of production changes for each crop are possible within each region as well as between crops and between regions.

The emphasis should be placed on the direction of change predicted and on the relative magnitudes of the changes and not on the absolute value of the predicted production levels and acreages. Thus, it is more important to evaluate a 3% increase in production in one crop to a 3% decrease in another crop in the same region than it is to evaluate the absolute number of bushels extra produced or not produced.

Use of sensitivity analysis on the variables in the equations will determine the stability of the responses to changes in the freight rate structure and pooling structure. If small changes in the value of the coefficient were to produce large changes in the production levels, then it could be concluded that the production is highly sensitive to the values of the coefficients. If the values of the coefficients can be changes upwards ten per cent and/or downwards by ten per cent with little or no change in the predicted production levels, then it can be concluded that the production levels are not highly sensitive to the values of the coefficients.

One of the major underlying assumptions of the model utilized for this analysis is that all producers have "perfect knowledge" of the market. This assumption is based on the premise of the producers knowing in advance of the production cycle, i.e. seeding time, what the applicable commodity prices, elevation charges and freight costs will be. This is a reasonable assumption in that the CWB initial prices for the forthcoming crop year, the Western Grain Transportation Act (WGTA) freight rates which will apply at the specific delivery points, and the generally charged elevation and handling charges by the grain handling companies are generally known in advance of seeding.

For the grains and oilseeds not marketed under the CWB, the use of the Winnipeg Commodity Exchange futures market, can guarantee a future price for future delivery of a specific commodity. Again, the producer is able to determine the price for the commodity about to be produced. In addition, all producers face the same market price, with the delineating factors being grade of the commodity and the specific point of delivery which would vary between producers and possibly between crops.

The model also makes the following major assumptions:

(i) the technical coefficients determined from historical data will remain constant after the method of payment is changed.

(ii) Acreage shifted away from one crop will be allocated to other feasible crops.

(iii) yields remain constant before and after the method of payment is changed; in other words, there is no change in input levels.

(iv) in areas of limited cropping alternatives, there may be increases or decreases in productions of feasible crops.

(v) changes in farmgate returns may impact other dependent variables which are in turn an independent variable in another function. For example, barley acreage production may impact on calf prices which may in turn impact on barley prices. The modelling is not dynamic, but is static and changes only one variable at a time. A fully dynamic model could be developed, but this would involve further modelling and resources significantly beyond the scope of this study.

Appendix 3.0 Example - Calculations of Livestock Response: WGTA Total Rate Scenario[16]

(i) Cattle produced and finished in Manitoba:

(a) Effects of eliminating feedgrain assistance programs in Alberta and Saskatchewan:

Feeders produced in Manitoba	336,800
Exports	(11,790)
Interprovincial out[1]	(90,775)
Total fed and produced in Manitoba	234,235

[1] Adjusted by assuming that the Manitoba origin feeder cattle currently being finished in Alberta and Saskatchewan, in the amount of 113,225 head, are instead finished in Manitoba. This flow (the 90,775 head) represents that which is currently going to eastern Canada and is assumed to continue doing so.

(b) Effect of lower feedgrain prices:

Initial cattle production X Percentage change in feedgrain prices (based on ten year average price) X Elasticity of cattle supply with respect to a change in feedgrain price = 234,235 X 3.0 X 8.2% = 57,622 head

Therefore, the total feeders produced and fed in Manitoba could increase to 234,235 + 57,622 = 291,857 head.

(ii) Hogs produced and fed in Manitoba

(a) Effects of lower feedgrain prices

Initial hog production X Percentage change in feedgrain prices (based on ten year average price) X Elasticity of hog supply with respect to a change in feedgrain price = Change in supply = 1,818,000 X 3.5 X 8.2% = 521,766 head

Therefore, the total hog production in Manitoba could increase to 1,818,000 + 521,766 = 2,339,766 head.

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[16] Based on:
- 1988 livestock profiles, prepared by Manitoba Department of Agriculture.
- Illustrates rationale only, subsequent scenarios in report use differing percentage grain price changes, i.e., 8.2% or 14.6%